

Title 10 – DEPARTMENT OF NATURAL RESOURCES
Division 35 – Land Survey
Chapter 1 – Cadastral Mapping Standards

10 CSR 35-1.010 Application of Standards

PURPOSE: These minimum standards provide the digital mapper and recipient of digital cadastral parcel mapping products a realistic guideline for the product delivered. This rule describes the digital cadastral mapping system components to which these minimum standards apply.

The minimum standards in this chapter apply to digital cadastral parcel mapping as it relates to the location and areas of real property boundaries and the United States Public Land Survey System. Any map designed and used to reflect legal property descriptions or boundaries for use in a digital cadastral mapping system shall comply with these rules. These minimum standards are not intended to address the particular requirements of assessment mapping as may be included in the rulemaking authority of the Missouri State Tax Commission.

10 CSR 35-1.020 Organization and Description

- (1) Scope. This standard describes digital cadastral mapping system components, content, design, and creation.
- (2) Mission. To provide a standard for the definition and structure for cadastral data in order to facilitate data sharing at all levels of government and the private sector and will protect and enhance the investments in cadastral data at all levels of government and the private sector.
- (3) Goals.
 - (A) To provide common definitions for cadastral information found in public records, to facilitate the effective use, understanding, and automation of land records.
 - (B) To standardize attribute values to enhance data sharing.
 - (C) To resolve discrepancies related to the use of homonyms and synonyms in land record systems, to minimize duplication within and among those systems.

(D) To provide guidance and direction for land records, mapping and land surveying professionals on standardized attribute values and definitions, to improve land records creation, management.

(E) To use participatory involvement in the Standard development to reach out to organizations to encourage broadly based application of the Standard.

10 CSR 35-1.030 Definitions

PURPOSE: This rule defines the terms as used in this standard.

(1) "Cadastral Data," is source information used to delineate the geographic extent, quantity and dimensions of cadastral parcels. Source information includes the United States Public Land Survey System (PLSS), subdivision plats, land surveys, real estate conveyances, right-of-way plans, etc.

(2) "Cadastral parcel mapping," is accurately delineated identification of all real property parcels. The cadastral map is based upon the United States Public Land Survey System (PLSS). For cadastral parcel maps the position of the legal framework is derived from the PLSS, existing tax maps, and tax database property descriptions, recorded deeds, recorded surveys, and recorded subdivision plats;

(3) "Coordinate Geometry (COGO)," is a method of creating vector map features in a digital mapping system using survey data, such as bearings, azimuths, angles and distances.

(4) "Digital Cadastral Parcel Mapping," encompasses the concepts of automated mapping, graphic display and output, data analysis, and database management as pertains to cadastral parcel mapping. Digital cadastral parcel mapping systems consist of hardware, software, data, people, organizations, and institutional arrangements for collecting, storing, analyzing, and disseminating information about the location and areas of parcels and the United States Public Land Survey System.

((5) "Metes and Bounds," describe the limits of a land parcel by reference to courses and distances around the tract, and by reference to natural and artificial monuments of record.

((6) "Missouri State Plane Coordinate System," is the system of plane coordinates which have been established by the National Oceanic Survey/National Geodetic Survey, or its successors, for defining and stating the geodetic positions or locations of points on the surface of the earth within the state of Missouri as defined in Sections 60.401 through 60.491 of the Missouri Revised Statutes.

((7) "Parcel," is a single unit of real property which can be described by location and boundaries and for which there is a history of defined, legally recognized interests. Parcel boundaries are usually described in a conveyance document by aliquot part, metes and bounds or by lot number in a recorded subdivision.

((8) "Point," is a vector map feature that has no length or area but is simply defined by a coordinate location.

((9) "Polygon," is a vector map feature represented by a closed geometric figure.

((10) "Polyline," is a vector map feature formed by connecting two points and having no area.

((11) "Tax Map," is a document or map for taxation purposes showing the location, quantity, dimensions and other relevant information pertaining to a parcel of land subject to ad valorem taxes, commonly known as property taxes.

((12) "Topology," is the spatial relationships between connecting or adjacent geographic features. Topological relationships are used for spatial modeling operations that do not require coordinate information.

((13) "United States Public Land Survey System (PLSS)," is the rectangular survey system created by the United States Government founded on a principal meridian and base line and forming townships approximately 6 miles north and south by 6 miles east and west, which are subdivided into 36 sections approximately one mile square. The system was established by surveys executed under the direction of the General Land Office (GLO) and is evidenced by township plats, field notes and other documentation as may be available. This system includes nonconforming private claims and other surveys as may have been performed under the direction of the General Land Office. The PLSS in Missouri is based upon the Fifth Principal Meridian.

10 CSR 35-1.040 – Coordinate System for Digital Cadastral Parcel Mapping Specified

PURPOSE: This rule specifies the coordinate system utilized for digital cadastral parcel mapping in Missouri.

- (1) The Missouri State Plane Coordinate System shall be the coordinate system used for digital cadastral parcel mapping in Missouri.
- (2) If the mapping is in meters, the coordinates may be converted to U.S. Survey Feet using the conversion of 1-meter equals 3.28083333 feet, where 1 meter equals 39.37 inches exactly.

10 CSR 35-1.050 – Digital Cadastral Parcel Mapping Requirements Pertaining to the United States Public Land Survey System

PURPOSE: This rule describes the minimum standard requirements that apply to the United States Public Land Survey System in a digital cadastral parcel mapping system.

- (1) The United States Public Land Survey System (PLSS) shall be the foundation for digital cadastral parcel mapping in Missouri.
- (2) The PLSS layer shall be delineated as accurately as can be achieved through practical application of available source information.
- (3) Appropriate and available survey source information shall be utilized to delineate the PLSS. The appropriate survey source information may be acquired from the Missouri Land Survey Repository, County Courthouse and other official authorities.
- (4) Determination of the digital location of section and quarter section corners of the PLSS should adhere to the survey principles under which the PLSS was created. Digital section vertices should be held to a minimum, preferably existing only at the quarter-corners.
- (5) Data prevalence for the establishment of the digital location of section corners shall be:
 - (A) Known coordinate points established by a licensed professional land surveyor or as recorded with the Missouri Department of Natural Resources' Land Survey Program.

(B) Reference data from available recorded surveys established by the County Surveyor or by licensed private surveyors and/or surveys filed with the Missouri Department of Natural Resources' Land Survey Program.

(C) Reference data from real estate conveyances, subdivisions plats, or other recorded land information.

(D) General Land Office (GLO) surveys and field notes.

(E) Established land use on digital orthophotography.

(F) Tax map information.

(6) Documentation for the establishment of the PLSS section corners shall consist of a point data layer delineating how each corner was set. The PLSS registered section corner documents and subsequent research shall be referenced or linked to this data layer within the digital mapping system. Delineation attribute may include but not be limited to:

(A) Coordinate

(B) Survey

(C) Deed

(D) Subdivision or Plat

(E) GLO

(F) Orthophotography

(G) Tax Map

(7) Quarter sections will be developed utilizing the standard survey methodology. Deviation shall include one of the above delineations.

10 CSR 35-1.060 – Digital Cadastral Parcel Mapping Requirements Pertaining to Land Parcels

PURPOSE: This rule describes the minimum standard requirements that apply to land parcels in a digital cadastral parcel mapping system.

(1) A digital cadastral parcel map shall be based upon the USPLSS.

(2) Digital cadastral parcel maps shall be developed by referencing the following research and recordable evidence.

(A) Delineated USPLSS

(B) Recorded subdivisions or resubdivisions of existing subdivisions and all local surveys

(C) Recorded real estate conveyances, including wills and trusts

(D) Right-of-way plans for roads, railroads, and changes of existing rights-of-way for federal, state, county and city streets

(E) Tax database description

(F) Digital orthophotography

(G) Existing tax maps

(3) Source documents, if available and used as reference in creating the digital cadastral parcel map, shall be referenced or linked to its appropriate data layer within the digital mapping system.

(4) Parcels described by metes and bounds shall be constructed within the digital mapping system by using coordinate geometry (COGO).

(6) Parcels shall be structured in a manner that facilitates topological analysis.

(7) All parcels shall be constructed as polygons.

(8) All parcels shall be continuous and seamless within a project and with adjoining projects where mapping has been completed in conformity to these standards.

(9) Cadastral Parcel Maps shall completely represent all of the parcels in a defined geographic extent. Any noted problems with completeness shall be noted in data quality documentation.

(10) Every effort shall be made to maintain the geometric integrity of the parcel. In cases where the on-ground reality differs substantially with the deeded, platted or originally mapped parcel, all available research shall be reviewed to resolve the discrepancy to the greatest extent possible.

(11) Methods and procedures necessary for resolving problems and discrepancies within or between parcel descriptions are not addressed by this standard. This standard recognizes that, within one parcel map, the location of parcel corners may vary in accuracy and that the accuracy of the location of a parcel corner may be unknown.

10 CSR 35-1.070– Accuracy Standard

PURPOSE: This rule prescribes the accuracy reporting requirements for digital cadastral parcel mapping.

- (1) Accuracy reporting for digital cadastral parcel maps shall be made in accordance with Missouri Mapping Standards (MMS) of 10 CSR 30-6.010 to 6.030, or the Federal Geographic Data Committee’s National Standard for Spatial Data Accuracy (NSSDA).
- (2) If accuracy reporting is not provided using MMS, NSSDA, or other recognized standards, information shall be provided that enables users to evaluate how the data fits the requirements of their application. This information may include descriptions of the source material from which the PLSS and cadastral parcels were digitally constructed, accuracy of ground surveys associated with PLSS and cadastral parcel digital construction, and quality control procedures used in the production process.

10 CSR 35-1.080 – Disclaimer

PURPOSE: This rule describes the disclaimer to be included with any digital or hard copy map produced from a digital cadastral parcel mapping system.

A digital cadastral parcel map provides graphic representation and access to cadastral information, but it does not purport to represent the results of a property boundary survey of each parcel shown, nor is it intended for property boundary determination of individual parcels in lieu of a property boundary survey by a licensed professional land surveyor. Therefore, the following disclaimer or equivalent shall be prominently displayed on any digital or hard copy map that displays cadastral parcel data.

“This Cadastral Map is for informational purposes only. It does not purport to represent a property boundary survey of the parcels shown and shall not be used for conveyances or the establishment of property boundaries.”

10 CSR 35-1.090 – Layers Specified

PURPOSE: This rule specifies the layers to be used in a digital cadastral parcel mapping system.

(1) Cadastral Layers

- (A) Township-Range (polygons)
- (B) Section (polygons)
- (C) Quarter Section (polygons)
- (D) U.S. Survey (Land Grant) (polygons)
- (E) Subdivision (polygons)
- (F) Map Block (polygons)
- (G) Original Block (polygons)
- (H) Original Lot (polygons)
- (I) Tract (polygons)
- (J) Property Parcel (polygons)
- (K) County Boundary (polygons)
- (L) City Limit (polylines or polygons)
- (M) State Line (polylines or polygons)

(2) Transportation Layer

- (A) Interstate centerlines and right-of-way (polygons)
- (B) U.S. Highway centerlines and right-of-way (polygons)
- (C) State Highway centerlines and right-of-way (polygons)
- (D) State Route centerlines and right-of-way (polygons)
- (E) County Road centerlines and right-of-way (polygons)

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(F) City Street centerlines and right-of-way (polygons)

(G) Railroad centerlines and right-of-way (polygons)

(3) Miscellaneous Layer

(A) Utility Easement (polygons)

AUTHORITY: Section 60.670 RSMo (2010).

*PUBLIC COST: This proposed amendment will not cost state agencies more than
???.?? dollars (\$???) in the aggregate.*

*PRIVATE COST: This proposed amendment will not cost private entities more than
???.?? dollars (\$???) in the aggregate.*

*NOTICE OF PUBLIC HEARING AND NOTICE TO SUBMIT COMMENTS: Anyone
may file a statement in support of or in opposition to this proposed amendment with the
Missouri Department of Natural Resources, Division of Geology and Land Survey, Sharon
Hankins, PO Box 250, Rolla, MO 65402 or via email at sharon.hankins@dnr.mo.gov .*